

INNOVATIVE RESEARCH ON POLITICAL EDUCATION REFORM IN THE "CADASTRAL MANAGEMENT" COURSE BASED ON THE LARGE LANGUAGE MODEL

AiGuo Wang*, LiFang Liu

School of Geography and Tourism, Luoyang Normal University, Luoyang 471934, Henan, China.

Corresponding Author: AiGuo Wang, Email: wangaiguoch@126.com

Abstract: The rapid development of the large language model (LLM) has provided a new path for political education in higher education. This paper focuses on the synergy between the "Cadastral Management" course and political education in land resource management. It explores how to utilize the technical advantages of LLM to reconstruct the teaching process, innovate teaching methods, and optimize the assessment system. By constructing an application framework of the "Value embedding - Situational interaction - Dynamic feedback" LLM and verifying it with cases from the "Cadastral Management" course, it has been demonstrated that the LLM significantly enhances the effectiveness of political education. This study also provides theoretical support and practical paradigms for artificial intelligence empowering ideological and political education in specialized courses.

Keywords: Large Language Model; Cadastral Management; Ideological and political education in courses; Education reform; Innovation research

1 INTRODUCTION

In the context of cultivating talents in higher education institutions, cultivating virtue and nurturing people has always been regarded as the fundamental mission. There is an imperative to establish a trinity talent cultivation model integrating "Value shaping, Ability development, and Knowledge dissemination". Nevertheless, traditional ideological and political education within professional courses has long confronted several challenges. For instance, ideological and political elements are often mechanically incorporated, teaching methods are monotonous, and student engagement remains relatively low. With the rapid advancement of artificial intelligence technology, especially the emergence of large language models, a technological foundation has been established to address these issues. Large language models exhibit remarkable advantages in natural language comprehension, course content generation, and personalized course interaction. These capabilities can offer substantial support for the in - depth integration of ideological and political education with professional course instruction. The innovative research on professional course ideological and political education driven by large language models, as presented in this paper, aims to provide novel perspectives for the reform and innovation of ideological and political education within professional courses in higher education. It endeavors to foster a new ecosystem of "intelligent +" ideological and political education in professional courses.

Large language models have witnessed exponential growth and are extensively applied across various domains, including image and text generation, human - computer interaction, real - time translation, and code generation. Currently, domestic universities and enterprises have developed over 200 large models. Notable examples include Baidu's Wenxin Yiyan, DeepSeek's DeepSeek, and Doubao by ChunTianZhiYun. The integration of ideological and political education into professional courses represents an inevitable trend in university - level ideological and General Secretary Xi Jinping proposed new media and emerging technologies to promote the profound integration of the strengths of ideological and political work with information technology. Domestic scholars have explored the integration of large language models into professional teaching to investigate how to enhance ideological and political education in higher education. They have put forward insights on opportunities, risks, and corresponding countermeasures[1]. Large language models, which support personalized learning, hold advantages in optimizing resource - based content and innovating educational models. However, they also face challenges such as generation bias and privacy protection concerns. Therefore, coordinated efforts from multiple parties are essential to maximize their potential in ideological and political education[2]. Artificial intelligence plays a crucial role in customizing teaching content, creating immersive learning environments, and facilitating seamless human - computer interaction. Nevertheless, potential pitfalls such as content distortion and over - reliance on technology exist. To mitigate these risks, socialist core values should be translated into knowledge graphs and integrated into large language models. Additionally, measures such as standardizing data input can provide a safeguard for empowering ideological and political education in higher education [3]. Large language models such as ChatGPT have already made significant contributions in education, scientific research, and other fields. Integrating such models into ideological and political education in higher education necessitates a careful analysis of issues related to data management and model training. Proposed solutions include data sharing and eliminating model bias[4]. By aligning with the characteristics of ideological and political education discourse dissemination, large language models' text and knowledge graphs can

be utilized to expand the reach of ideological and political education discourse[5]. The application of text - to - video models in ideological and political education can optimize educational content and innovate teaching methods through visualization and precision - targeted approaches[6]. Generative artificial intelligence offers valuable insights for ideological and political education in higher education. By enhancing teaching scenarios and improving human - computer interaction experiences, it can facilitate more effective situational teaching in ideological and political courses[7]. Utilizing DeepSeek as the basis for ideological and political education can drive the innovative transformation of ideological and political education towards a digital and intelligent paradigm[8]. Generative artificial intelligence, with its strong interactivity, precision, and virtuality, creates diverse teaching scenarios for university ideological and political education. However, a coordinated approach from aspects such as "subject - content - teaching - field" is crucial to achieve a profound integration of artificial intelligence and ideological and political education[9]. AI has the potential to empower both ideological and political education in courses and ideological and political courses themselves, thereby promoting their coordinated development[10]. To enhance the effectiveness of generative artificial intelligence in ideological and political teaching in higher education, it is essential to clarify the objectives of technological empowerment and improve the quality of resource provision[11]. The application of large language models to enhance ideological and political education in professional courses is still in its infancy. Many issues remain unresolved, such as the complexity of value alignment, content controllability, and the absence of emotional education. This paper, in light of the ideological and political education practice of the "Cadastral Management" course within the Land Resources Management major, constructs an application framework for large language models featuring "value embedding - situational interaction - dynamic feedback". This framework serves to validate the feasibility of using large language models to enhance ideological and political education in professional courses.

2 OPPORTUNITIES AND RISKS OF EMPOWERING IDEOLOGICAL AND POLITICAL EDUCATION WITH LARGE LANGUAGE MODELS

2.1 Opportunities: Empowering Educational Reform with Large Language Models

2.1.1 Solving the pain points of traditional ideological and political education

Traditional ideological and political education is relatively monotonous, with all students facing the same PPT. This "undifferentiated teaching" ignores students' professional backgrounds, causing students to feel that ideological and political courses are "irrelevant to me" and creating a sense of alienation. This results in a situation where teachers indoctrinate ideas in the classroom and students passively accept them, undoubtedly leading to a loss of interest in ideological and political courses. However, large language models can combine students' professional backgrounds and knowledge reserves to intelligently generate ideological and political content for professional courses that is in line with their professional backgrounds and knowledge reserves.

2.1.2 Providing personalized ideological and political education for professional courses

Large language models have powerful natural language processing and context generation capabilities, enabling precise understanding of students' actual situations and the formulation of personalized plans. By accurately profiling students' majors, large language models can transform ideological and political education from a broad, undifferentiated approach to a precise, targeted approach for professional courses, truly achieving personalized, professional, and multi-modal ideological and political education for professional courses.

2.2 Risks: Challenges in the Application of Large Language Models

2.2.1 Value risks

The training data for large language models is mostly sourced from the Internet, where various information is mixed, including a large amount of English information. For instance, over 92% of ChatGPT's training data is in English. Therefore, the training data may contain content that does not align with socialist values. Moreover, during the training process, large language models do not screen the data, and if the weights are incorrect, it will seriously affect the model's value judgment in ideological and political education.

2.2.2 Crisis of the essence of education

The infiltration of large language models in university education may also trigger a crisis in the essence of education. If complete teaching plans and beautiful PPTs can be quickly generated through large language models, and the explanation level is higher than that of teachers, such education will inevitably lead to a cognitive crisis that university education is being replaced by virtual generation.

2.2.3 Information security risks in education

Information security is a key concern in the application of large language models. When using large language models to design ideological and political courses for university professional courses, some large language models may exhibit data collection infiltration, such as commercial institutions collecting information to push commercial messages or the leakage of campus information trajectories.

3 INNOVATIVE FRAMEWORK FOR IDEOLOGICAL AND POLITICAL EDUCATION IN PROFESSIONAL COURSES BASED ON LARGE LANGUAGE MODELS

Despite the various risks in the application of large language models, they can utilize vast knowledge bases to assist teachers in university education, automatically identify ideological and political mapping points in professional course content, providing new ideas for the reform of ideological and political education in professional courses in universities.

3.1 Framework for Constructing the Teaching Process of Professional Ideological and Political Education

At the basic level, professional knowledge bases, ideological and political element maps, student profile data, and teaching resource libraries are used as the foundation for ideological and political education in professional courses. Large language models are utilized to analyze the content that needs to be designed and generate the required ideological and political content for the courses. The generated content is confirmed by professional teachers and then reviewed by relevant teachers and departments in the college or university to finally determine the ideological and political content of the courses. The confirmed content needs to be prepared by teachers before class and learned and consolidated through classroom lectures, interactive Q&A, and after-class assignments during classroom teaching. Professional ideological and political courses also require support from systems such as content security support systems, expert support networks, and intelligent teaching evaluation systems. The detailed framework for constructing the teaching process of professional ideological and political education is shown in Figure 1.

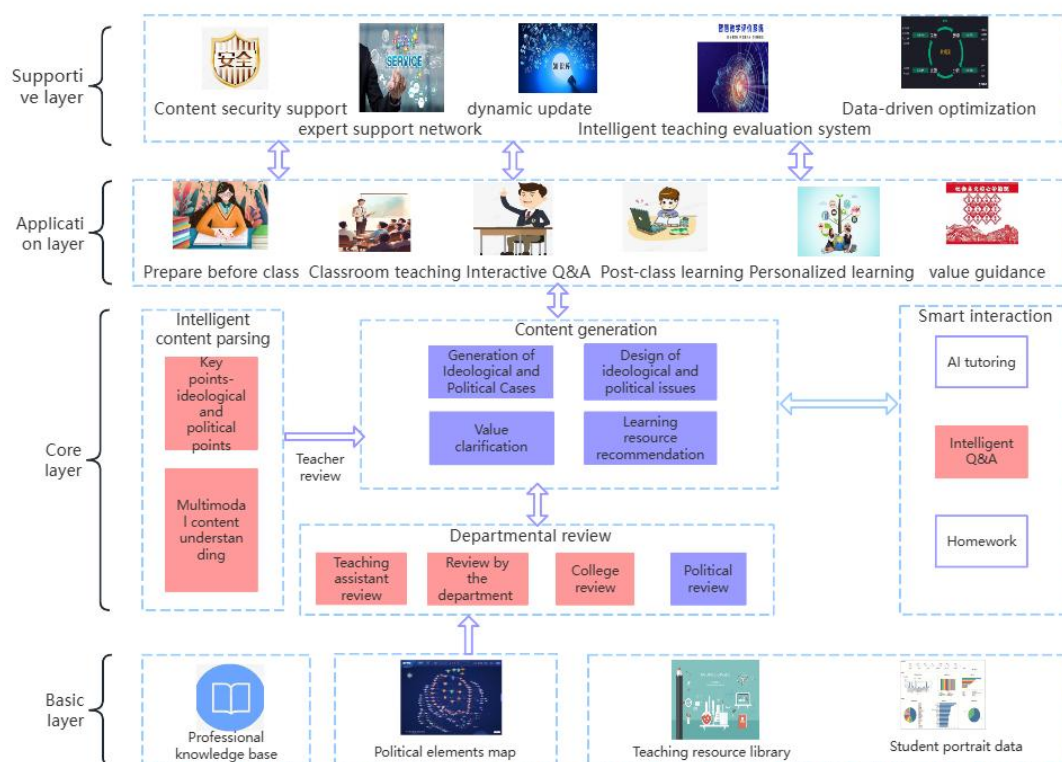


Figure 1 Innovative Framework for Ideological and Political Education in Professional Courses of Large Language Models

3.2 Construction and Generation of Ideological and Political Content in Professional Courses

The construction of ideological and political content in professional courses by large language models mainly achieves through the following aspects: First, on the input source: Teachers input the main content of the chapter and propose constraints for integrating ideological and political elements. The large language model then understands, thinks, and analyzes to generate ideological and political education content that meets the requirements. Professional teachers analyze the generated content, summarize the key points of ideological and political education in professional courses, and prepare for the class after the review of relevant ideological and political content by the department. During the course preparation, it is also necessary to consider how to introduce it into classroom teaching, how to interact with students, how to make students understand, and how to encourage students to think after class. Second, on the content review layer: A "three checks and one review" system should be formed. The three checks require teachers to self-check the ideological and political content of professional courses, the department (teaching and research office) to check the ideological and political content of the course, and the college to check

the ideological and political content of the course. The one review requires the professional course ideological and political supervision team of the college to review the ideological and political content of the course, etc. Third, on the learning feedback layer: Professional course ideological and political content innovation and reform should be carried out through feedback from teachers' observations during class, students' discussions after class, and supervision feedback organized by the department and college.

4 PRACTICE AND EVALUATION OF IDEOLOGICAL AND POLITICAL REFORM IN GEODETIC MANAGEMENT PROFESSIONAL COURSES

4.1 Research Design and Method

Three mainstream large language models, Chatbox, Doubao, and Wenxin Yiyan, were selected as auxiliary tools. The research process includes: planning (designing prompts) → action (model generating content) → examination (multi-model comparison analysis and fact-checking) → reflection (teaching team discussing and determining the final plan and implementing it).

4.2 Multi-model Collaboration and Content Optimization

In the practice of large language models empowering geodetic management courses, the "Historical Evolution of China's Geodetic Development" in the third section of the first chapter of "Geodetic Management" was used as the practice of ideological and political reform in large language models. Chatbox, Doubao, and Wenxin Yiyan were respectively used to design ideological and political content for professional courses. In the practice, the content of this section was directly input into the question layer, and then the problems that the large language model needed to solve were given, that is, to provide an ideological and political course system based on the content of the geodetic management professional course.

The ideological and political elements integrated by Doubao are as follows:

Reflecting the people-first concept: From the Communist Party of China's emphasis on land issues in modern times to the land reform in the early days of the founding of the People's Republic of China that enabled farmers to truly own land, and then to the land system reform after the reform and opening up that guaranteed farmers' rights and interests, it reflects that the Communist Party of China has always placed the people's interests first, centered on the people, and is committed to allowing the people to share the fruits of land development.

Cultivating the rule of law awareness: China's geodetic management has evolved from simple land tax regulations in ancient times to the gradual promulgation of a series of land laws and regulations in modern times, and then to the improvement of geodetic management based on the "Land Management Law" and other laws in modern times, reflecting the continuous strengthening of the rule of law concept and guiding students to establish a rule of law awareness, respecting and abiding by laws and regulations.

Stimulating the spirit of innovation: From the ancient fish-scale map drawing method to the introduction of modern surveying knowledge by the Kuomintang government in modern times, and then to the use of advanced technologies such as remote sensing for land surveys in modern times, it reflects the continuous innovation in geodetic management technology and encourages students to be brave in innovation in their studies and work and solve problems with new technologies.

Enhancing historical responsibility: By understanding the history of geodetic development, students can understand the importance of land management for national stability and economic development, and recognize that as new-era youth, they shoulder the historical responsibility of maintaining the rational use of national land resources and promoting the development of the land management cause.

The ideological and political content of professional courses provided by Chatbox is relatively detailed. First, it combines core regulatory documents and provides historical significance and ideological and political value, as shown in Table 1. Second, it provides a design module for the ideological and political course system, including Module 1: Geodetic Management and National Governance; Module Two: Land System and Rule of Law Construction; Module Three: Technological Evolution and Technological Innovation. Third, the list of video resources provided by Chatbox is shown in Table 2.

Table 1 The Ideological and Political Value Table of the Development History of China's Cadastre Management Provided by Chatbox

Time	Legal document	Historical significance	Ideological and political values
1930	The Land Law of the Republic of China	The land registration system was first established in law	Laying the foundation for the rule of law
1950	The Land Reform Law of the People's Republic of China	abolish feudal land system	The superiority of the socialist system
1986	Land Administration Law	Establish basic state policies	Reform and development

Time	Legal document	Historical significance	Ideological and political values
			guarantee
1998	Land Administration Law (Amendment)	Establish a land dynamic monitoring system	Strategic technology to rejuvenate the nation

Table 2 The List of Video Resources Provided by Chatbox

Type	Duration	Content Theme
Expert Interview	18 minutes	China Agricultural University "The History of China's Land System Reform"
Operation Guide	15 minutes	Demonstration of the 3D Cadastre Platform
Historical Materials Explanation	12 minutes	Interpretation of the Fish-scale Land Register Archives in the National Museum
Documentary	30minutes	Land Reform in the Suburbs of Beijing in 1949

The ideological and political integration points in the professional course design content provided by Wenxin Yiyin are shown in Table 3. The suggested videos include the documentary "The Foundation of a Great Nation" Episode 3 "Land Transformation" (showing rural reform), CCTV's "Rule of Law in China" Episode 5 "Lawful Administration" (interpretation of the Land Administration Law), and the animated short film "Understanding Real Estate Registration in One Minute" (demonstration of technical means).

Table 3 The Ideological and Political Integration Points of the Development History of China's Cadastre Management Provided by Wenxin Yiyin

Course Module	Teaching Content	Supporting Textbook	Ideological and Political Integration Points
Module One: Ancient Cadastre Wisdom	Land classification in the Xia and Zhou Dynasties, Shang Yang's Reforms, Fish-scale Land Registers	(2100 BC - 1368 AD)	The governance wisdom of ancient rulers, embodying the idea of "the people are the foundation of the state"
Module Two: Modern System Transformation	land laws formulated by the Communist Party, Land registration reform in the Republic of China	Policy comparison table (1912 - 1949)	The impact of institutional choices on national economy and people's livelihood, highlighting the people-oriented stance of the Communist Party
Module Three: Modern System Construction	Reconstruction of cadastre in New China, Land Administration Law	Timeline (1949 - 2000)	The superiority of the socialist system, practice of the strategy of governing the country by law
Module Four: Innovation and Development Stage	Household contract responsibility system, real estate registration	Policy comparison table (1978 - 2000)	The spirit of innovation in reform and opening up, technology empowering social governance

Combining the ideological and political integration points of the cadastre management professional course provided by the three large language models and the suggested video list, each item is analyzed. It is found that the third episode of the CCTV documentary "The Foundation of a Great Nation" is not "Land Transformation" but "The Field of Hope", but its content is related to cadastre management and can be used as part of the professional ideological and political education. However, the fifth episode of "Rule of Law in China" is "Fair Justice", and its content is not related to cadastre management. By searching for "CCTV (interpretation of the Land Administration Law)", it can be seen that CCTV has many related contents, such as the News Live Room (interpreting the newly revised Land

Administration Law, improving the land expropriation procedure, and clarifying the scope of expropriation), which can also be used as part of the ideological and political course of cadastre management. Through online search, no video titled "Understanding Real Estate Registration in One Minute" was found. Among the video resource list provided by Chatbox, after searching, no relevant videos were found. Based on the integration points of ideological and political education in professional courses provided by three major language models and after discussions among the teachers of the research group, the ideological and political education integration points for this section were ultimately determined to include three main aspects: First, the land policies implemented by the Communist Party of China during the land revolution demonstrated the Party's determination to alleviate the burden on farmers, promote the Anti-Japanese National United Front, eliminate the feudal exploitation system, and develop agricultural production. Second, during the period of new China's construction, the establishment of systems such as land registration management and land laws reflected the superiority of the socialist system. Third, after the reform and opening up, on the one hand, the implementation of the household contract responsibility system and the adoption of systems such as real estate registration were carried out; on the other hand, new technologies such as RTK and unmanned aerial vehicle remote sensing were utilized, enabling China's land system to not only embody the spirit of innovation in reform and opening up but also leverage high-tech to achieve information-based land management. The video content will showcase relevant aspects of real estate surveying and mapping, rural land rights confirmation and registration, and rural land contract management rights from the CCTV documentary "The Foundation of a Great Nation" as shown in Figure 2. Through these contents, students will understand the determination of this discipline to serve society, empower social development with technology, and contribute to the country's development.



Figure 2 Video on Real Estate Surveying and Mapping and Rural Land Contracting Management Rights Certificate

The course content is interspersed with interactive discussions, enabling students to recognize that every change in cadastral management is closely related to the destiny of the country; it encourages students to draw lessons from history, cherish the achievements of land development and reform, uphold the people-centered philosophy, be courageous in innovation, deeply understand the laws of the development of institutional civilization, the role of the rule of law in safeguarding people's livelihood, and the goal of modernizing the governance capacity of territorial space, and contribute their own strength to the development of China's land management cause, jointly promoting the country's progress towards prosperity and strength. The after-class assignment is designed to have students write a short essay to express their understanding of the historical evolution of cadastral management in China, as well as the inspirations and insights they have gained, with a focus on ideological and political education-related content, such as personal responsibility and the concept of the rule of law.

4.2 Analysis of Ideological and Political Education Reform in Cadastral Management Courses

The use of large language models to reform ideological and political education in cadastral management courses has gradually improved the situation where professional course teachers previously separated professional content from ideological and political content when teaching. It enables professional course teachers to integrate ideological and political course content into professional courses, avoiding the awkward situation where traditional professional courses incorporate ideological and political elements in an overly forced manner. It also alleviates the heavy burden of preparing for both professional and ideological and political content that professional course teachers previously faced. Through the reform of ideological and political education in cadastral management courses using large language models, the time spent on preparing and collecting materials for ideological and political courses has been significantly reduced, by approximately 50%. Since cadastral management courses fall under both management and engineering disciplines, this reform also provides assistance to engineering teachers in the theoretical construction of ideological and political education in their courses.

5 CONCLUSION

Large language models possess powerful capabilities in generating text, images, and videos based on semantics, bringing unprecedented opportunities to ideological and political education in university professional courses. Utilizing large language models to assist in the construction of ideological and political education in professional courses, especially for engineering teachers, offers a new teaching approach. In the future, the value of university

teachers lies not only in imparting professional knowledge but also in guiding ideological and political education. Through the reform of ideological and political education in cadastral management professional courses, the integration of land management surveying and mapping, GIS, and land equity and sovereignty is achieved, cultivating a new generation of land guardians who are proficient in cadastral surveying techniques, knowledgeable in land law, and filled with a sense of patriotism. They will fulfill the mission of applying cadastral surveying technology to resolve land disputes, serving the people with land law knowledge, and conducting research on the land of their motherland in the construction of a digital China, fostering a continuous stream of technical, patriotic, and service-oriented young people in the new era of socialism.

COMPETING INTERESTS

The authors have no relevant financial or non-financial interests to disclose.

FUNDING

This paper is funded by the Education Strong Province Project of Philosophy and Social Sciences of Henan Province (Project Approval Number: 2025 JYQS0322)

REFERENCES

- [1] Zhou C, Zhao Y, Zhou Y. Empowering ideological and political education in universities with large language models: Opportunities, risks, and responses. *Journal of Hubei Normal University (Philosophy and Social Sciences Edition)*. 2025, 45(2): 103-111+156.
- [2] Han D. The impact of large language models in artificial intelligence on ideological and political education and countermeasures. *Journal of Shandong Vocational College of Commerce*. 2025, 25(3): 82-86+123. DOI: 10.13396/j.cnki.jsict.2025.03.012.
- [3] Luo Z. Implementation strategies for empowering high-quality development of ideological and political education in universities with generative artificial intelligence. *Journal of Social Sciences of Harbin Normal University*. 2025, 16(3): 171-178.
- [4] Shen Z, Guan Q. Exploration of the model construction of integrating ChatGPT-like large models into higher education ideological and political education. *Theoretical Observations*. 2024(7): 23-29.
- [5] Xiong L. Research on the innovation of ideological and political education discourse communication based on large language models. *Research on Ideological and Political Education in the Classroom*. 2024(2): 151-161.
- [6] Zhang J, Hao Y. Practical analysis of "text to video" model empowering ideological and political education. *Journal of Nanjing University of Aeronautics and Astronautics (Social Science Edition)*. 2025, 27(4): 113-120.
- [7] Tang Y, Qi Y, Qing P. The mechanism and path of generative artificial intelligence empowering the situational teaching of university ideological and political courses. *Higher Architecture*. 2025, 34(4) :174-180.
- [8] Wu Y. Why generative intelligence enters the field of ideological and political education based on DeepSeek technology scenarios, scene innovation and potential risks. *Seeking Truth*. 2025(4): 26-34.
- [9] Zhou H, Zhang G. Generative artificial intelligence intervention in university students' ideological and political education: Value, challenges and countermeasures. *Journal of Hunan First Normal University*. 2025: 1-17.
- [10] Zhang T. Research on the path of co-educating "ideological and political courses in courses" and "courses in ideological and political courses" in colleges and universities under AI empowerment. *Journal of Hubei University of Science and Technology*. 2025, 45(4):96-103.
- [11] Lan B, Qin R. The challenges and path of generative artificial intelligence empowering university ideological and political course teaching. *Journal of Nanning Normal University (Philosophy and Social Edition)*. 2025, 46(4):92-103.